

## DESCRIPTION OF THE COURSES

- Course code: FZP1007
- Course title: General Physics – G1-external
- Language of the lecturer: Polish or English

<i>Course form</i>	<i>Lecture</i>	<i>Classes</i>	<i>Laboratory</i>	<i>Project</i>	<i>Seminar</i>
<i>Number of hours/week*</i>	2	1			
<i>Number of hours/semester*</i>	22	11			
<i>Form of the course completion</i>					
<i>ECTS credits</i>	4	2			
<i>Total Student's Workload</i>					

- Level of the course (basic/advanced): basic
- Prerequisites: none
- Name, first name and degree of the lecturer/supervisor: lecturers from Institute of Physics
- Names, first names and degrees of the team's members:
- Year:.....I..... Semester:.....II.....
- Type of the course (obligatory/optional): obligatory
- Aims of the course (effects of the course): to broaden student's knowledge about the laws governing natural phenomena, solving technical problem using physical laws
- Form of the teaching (traditional/e-learning): traditional
- Course description:
  - 1) Lecture : classical mechanics , thermodynamics periodic motion and mechanical waves
  - 2) Classes: solution of problems illustrating topics presented during lectures.
- Lecture:

<i>Particular lectures contents</i>	<i>Number of hours</i>
1. Vectors: vector addition, components, unit vectors, products of vectors	1
2. Kinematics and Dynamics of Particle : velocity, acceleration, Newton's laws, applications of Newton's laws, friction, nonlinear motion, noninertial reference frames	2
3. Work and energy	2
4. Systems of Particles: the center of mass, conservation of linear momentum, collisions	2
5. Rotational Kinematics: angular velocity , angular acceleration, moment of inertia, rotational kinetic energy, ,	2
6. Dynamics of Rotational Motion: torque and angular momentum, Newton's second law for rotation, conservation of angular momentum	2
7. Gravity: the gravitational field, Newton's law of gravity, Kepler's law	1
8. Fluid Dynamics: continuity equation, Bernoulli's Equation, Introduction to relativity: Einstein postulate, relativity of time and length, relativistic dynamics	2
9. Periodic motion: simple harmonic motion, damped oscillations,	2

resonance	
10. Mechanical Waves: waves characteristics, the wave equation, speed of wave, superposition, standing waves, sound, the Doppler Effect,	2
11. Thermodynamics: temperature, heat, thermal expansion, heat transfer, first law of thermodynamics	2
12. Thermodynamics II : heat engines, The Carnot Cycle, entropy, the second law of thermodynamics	2

- Classes – the contents:

	<i>Particular classes contents</i>	<i>Number of hours</i>
1	Newton's Laws	2
2	Work and energy. Conservation of energy	2
3	Dynamics of Rotational Motion	2
4	Conservation of angular momentum	1
5	Periodic motion	1
6	First law of Thermodynamics	2
7	Final Test	1

Seminars – the contents:

- Laboratory – the contents:
- Project – the contents:
- Basic literature:

a) D. Halliday, R. Resnick, J.Walker: *Podstawy Fizyki*, tomy 1-2, Wydawnictwa Naukowe PWN, Warszawa 2003.

b) K. Jezierski, B. Kołodka, K. Sierański: *Zadania z rozwiązaniami. Część I*, wydawnictwo Scripta

- Additional literature:

a) I.W. Sawieliew, Wykłady z Fizyki tom1 i 2 , Wydawnictwa Naukowe PWN, Warszawa, 2003

b) K.Sierański, K.Jezierski, B.Kołodko – *Fizyka-Wzory i Prawa z objaśnieniami cz.I iII*, wydawnictwo Scripta

c) K.Jezierski, K.Sierański, I. Szlufarska – *Fizyka – repetytorium. Zadania z rozwiązaniami* - wydawnictwo Scripta

- Conditions of the course acceptance/creditation:

\* - depending on a system of studies